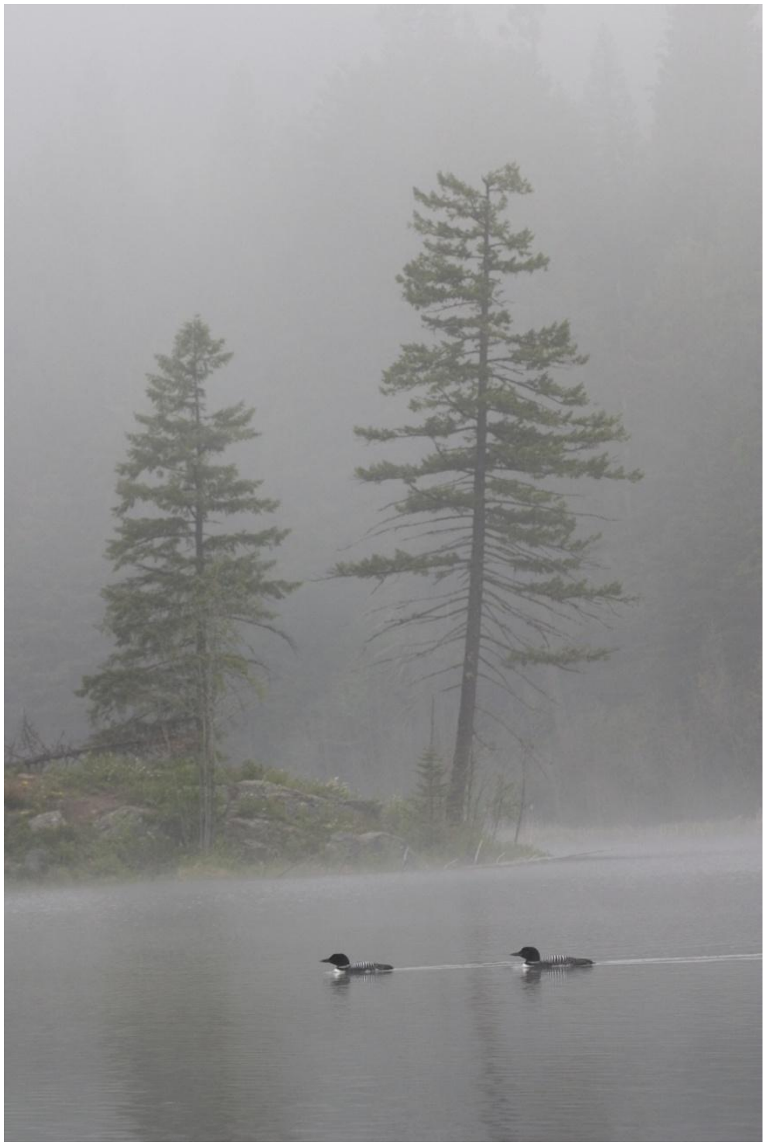
28.0. Recommendation to Ban the Use of Lead Fishing Tackle in Washington

Submitted to Washington Fish and Wildlife Commission
November 6, 2009



Daniel Poleschook, Jr. and Virginia R. Gumm

A territorial pair of common loons awaits the start of nesting amid the beauty of a foggy morning at Swan Lake, Washington.

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Introduction

Long-term observations (1996-2009), data collection and mortality determinations of common loons *(Gavia immer)* and other waterbirds in Washington compiled as documents in *Common Loon Reference Records* (Poleschook and Gumm 2008) provide conclusive evidence of the toxicity of lead fishing tackle and the high frequency of mortalities it causes. Common loons are an important aquatic indicator species (Strong 1990) in northern North America and Washington because they reside approximately six months each year in fresh and salt water, they are a long-lived, high-trophic, piscivorous species, they are easy to identify, and because the species has high public appeal. Sixty-eight common loons have been banded in Washington by biologists and field scientists from BioDiversity Research Institute (1995-2008; 23 adults and 45 chicks, Document 2.1). These birds have been providing an abundance of scientific data, including some used in this Recommendation.

Washington is unique in its year-round distribution of having common loons throughout the State on salt and fresh water, and to include summer, winter and juvenile-maturation ranges:

Table 1. Yearly Distribution of Common Loons in Washington

Range/ Season	Maps	Common Loon Distribution in Washington
Breeding/ Summer	**2 & 6**	**Adults: Small populations (<50) of adult non-breeding common loons and 13 breeding pairs (2008) are in Washington during the summer. Breeding pairs utilize peripheral and outlier breeding range as shown on Maps 2 and 6.**
Summer	**5**	**Juveniles: Small populations (<100) of maturing juveniles are present in Washington during the summer. Their distribution is variable but similar to the adult winter range shown on Map 5.**
Migration/ Migration-staging	**3 4**	**Adults, fledglings and maturing juveniles use various migration routes (Map 3) and migration-staging waterbodies (Map 4).**
Winter/ Juvenile-maturation	**5**	**Larger populations of adults plus maturing juveniles winter on salt water in Puget Sound, Strait of Georgia, Strait of Juan de Fuca, along the Pacific Ocean coastline, and on adjacent open fresh-water lakes (Map 5). The 11 reservoirs of the Columbia River, open tributary rivers and adjacent lakes are also used during the winter by both adults and maturing juveniles.**

Note: Images, charts and maps used herein are shown below. This document (# 28.0) and other documents referred to are from 52 documents compiled in *Washington Common Loon Reference Records* (Poleschook and Gumm 2008), a United States Forest Service Report previously distributed to biologists and wildlife managers of the Washington Department of Fish and Wildlife, and Commissioners of the Washington Fish and Wildlife Commission.

Recommendation

The recommendation is made to ban the use of lead fishing tackle in Washington, as:
No person shall use lead weights or sinkers (1-ounce or less), artificial lures or jigs (2-inches and less along the longest axis, measurement includes the hook), lead-core line, keel trolling weights, weighted flies, or any fishing gear lighter and shorter than these limits for the purposes of fishing in any Washington State waters (salt and fresh) which have any content of lead within.

Leaded tackle is defined as follows:

A. "Lead weights and sinkers" means any lead device designed to be attached to fishing line for the purpose of sinking the line, the lead portion of which is one ounce or less. Sinker category includes trolling sinkers, split-shot sinkers, bass-casting sinkers, worm weights, and many other shapes of fishing gear used to weight fishing lines.

B. "Lead jig" means any lead weighted fishing hook that measures two inches and less along its longest axis, measurements include the hook. Lead jigs, or jig heads are defined as lead weights of a variety of shapes that have been cast around a hook shaft.

Justification for Recommendation

Justification for the recommended ban on the use of lead fishing tackle in Washington is based on empirical data from documents compiled in *Washington Common Loon Reference Records* (Poleschook and Gumm 2008) and data from other referenced workers. These data appear in the following category headings:

I. Justification of Recommendation from Washington common loon mortality data

II. Justification of Recommendation to include ban on all various types of lead fishing tackle

III. Justification of Recommendation to include all Washington waters in a ban on the use of lead fishing tackle from common loon range and migration maps

IV. Justification of Recommendation based on population decline of the common loon in Washington and western North America

I. Justification of Recommendation from Washington common loon mortality data

A. Fishing-related mortalities are more common than other mortalities: Twenty-seven common loon carcasses have been collected in Washington since 1996. Twenty-three of those have known causes of death (Map 1; Documents 5.0, 5.1, 5.2 and 11.0). Fishing-related mortalities account for 13/23 = 57% of all known common loon mortalities (Chart 1) in Washington.

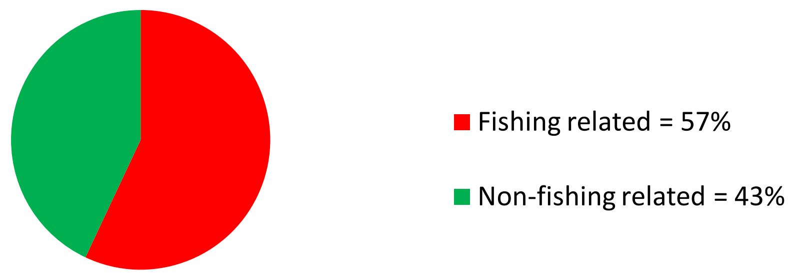


Chart 1. Categories of common loon mortalities in Washington 1996-2008 (n = 23) with known causes of death.

Fishing-related common loon mortalities (Chart 2) include:
1. Lead toxicosis = 9/13 = 69%
2. Fish net entanglement = 2/13 = 15%
3. Fishhook puncture = 1/13 = 8%
4. Heavy metals (excluding lead) = 1/13 = 8%

Chart 2. Categories of fishing-related common loon mortalities in Washington 1996-2008 (n = 13).

B. Lead toxicosis has the highest frequency of cause of death in all known Washington common loon mortalities.

Lead toxicosis from various forms of lead fishing tackle is the leading cause of death of fishing-related common loon mortalities as 9/13 = 69% (Chart 2), and also for all known causes of death of common loon mortalities as 9/23 = 39% (Chart 3; Documents 5.0, 5.1, 5.2).

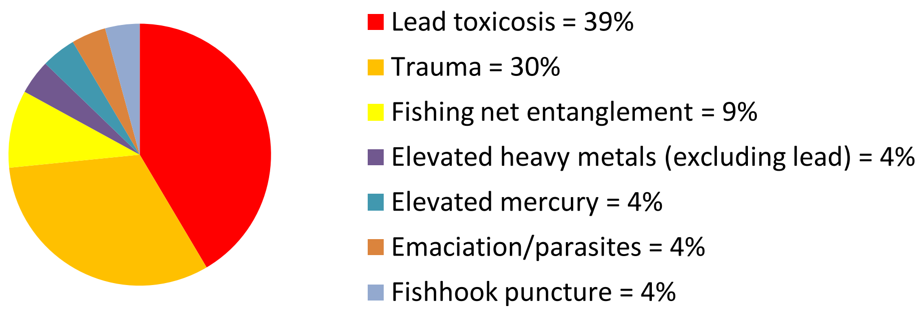


Chart 3. Causes of death of common loon mortalities in Washington 1996-2008 (n = 23).

Common loons ingest lead fishing tackle mainly by taking hooked fish on a line in use or a broken line, and to a lesser amount by mistakenly selecting lost lead sinkers, shot and bullets for grit to aid digestion. Images 1 – 12, below, provide poignant illustration from Washington of how adult, juvenile and chick loons ingest lead and the resulting mortalities.

Eliminating lead toxicosis mortalities, which are mainly caused by lead fishing tackle, would reduce known common loon mortalities in Washington up to 39% (Chart 3) while also significantly reducing other waterbird mortalities. These include other species of loons, grebes, mergansers, diving ducks, dabbling ducks, herons, egrets, pelicans, cormorants, swans, geese, gulls, osprey, eagles, and other raptors that are susceptible, on a year-round basis throughout Washington, to lead toxicosis from lead fishing tackle. No other waterbird conservation action would provide greater benefit in Washington. Reducing common loon mortalities by this amount would have a positive effect on slowing the rate of northward contraction of the breeding range of the common loon in Washington and western North America (Maps 2 and 6) by reducing the rate of long-term population decline of breeding and wintering common loons (Document 9.0).

New Hampshire enacted legislation to ban the use of lead fishing tackle in 1998. A comparison of pre-ban and post-ban gizzard contents of common loon mortalities there indicates approximately a 50% reduction in the percentage of common loon mortalities due to lead toxicosis (Vogel 2005).

C. Lead toxicosis common loon mortalities occur in all habitat ranges and occur on all Washington waters.

The nine known Washington lead toxicosis common loon mortalities were recovered or found as follows:

4/9 = 44% were on winter/juvenile-maturation range, Chart 4, Maps 1 and 5, Document 5.1
mortality #'s: 5, 13, 20 and 21.

3/9 = 33% were on migration/migration-staging, Chart 4, Maps 1, 3 and 4, Document 5.1
mortality #'s: 3 and 6.

2/9 = 22% were on breeding territories/summer range, Chart 4, Maps 1 and 2, Document 5.1
mortality #'s: 7 and 26.

Chart 4. Ranges of known common loon lead toxicosis mortalities in Washington 1996-2008 (n = 9).

These data indicate that a ban on the use of lead fishing tackle limited to common loon breeding waterbodies would reduce the exposure to lead for a small number of common loons (about 13 breeding pairs annually, Map 2; Documents 3.0, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 and 9.0), for only part of the year, and provide virtually no benefit to a much larger population of common loons and other waterbirds throughout the year and throughout the remainder of Washington.

<u>II. Justification of Recommendation to include ban on all various types of lead fishing tackle</u>

A. The following lead objects have been recovered from the gizzards of common loons in Washington: sinkers up to 1.78 cm = 0.70 inch (Image 3), weights, jigs, split-shot and lead-based line (Documents 5.0 and 5.1).

B. From work by Sidor, et al, (2003), and Pokras, et al, (2009), at Tufts Cummings School of Veterinary Medicine Wildlife Clinic, of 522 common loon carcasses that were examined from New England, 118 had ingested lead objects with the following frequency: sinkers 48%, jigs 19%, split shot 12%, shotgun pellets and bullets 11%, other lead 8%, and unknown lead 2%.

C. David C. Evers, Executive Director of BioDiversity Research Institute, stated (2007): "Lead poisoning from the ingestion of lead fishing tackle has been identified as a significant cause of common loon mortality throughout eastern Canada and the United States."

D. All of the types of fishing tackle mentioned above have non-lead alternatives that are becoming more available and more moderately priced. The Minnesota Pollution Control Agency (2009) maintains a list of 33 companies that offer lead-free tackle. Many leading fishing tackle companies are now joining in this conservation effort, not only by offering lead-free tackle alternatives, but also by supporting the lead-free conservation effort through education. Some of these companies now offer exclusively lead-free fishing tackle.

E. A sizeable percentage of people fishing that we have given on-location education about the toxicity of lead fishing tackle have indicated that they would purchase lead-free fishing tackle in the future. Many others agree that the use of lead fishing tackle is harmful to wildlife and the environment, but state they will not change to lead-free alternatives until there is an actual ban on the use of lead fishing tackle.

III. Justification of Recommendation to include all Washington waters in a ban on the use of lead fishing tackle from common loon range and migration maps

A. Common loons in Washington winter on salt water in Puget Sound, the Strait of Georgia, the Strait of Juan de Fuca and along the Pacific coastline, and in fresh water on the 11 reservoirs of the Columbia River, and in favorable winters on portions of the Okanogan River, Snake River and Pend Oreille River, and on various open lakes (Map 5, winter/juvenile-maturation range). See Document 7.0 for a complete listing and information of 28 common loon wintering waterbodies in Washington.

B. Only a small percentage of Washington common loon juveniles that were hatched and banded in Washington survive their first two or three years on their juvenile-maturation range (8 of 37 = 22%; Documents 6.0 and 8.0; Map 5) to return to their natal lake region to attempt to develop a breeding territory (a low-dispersal trait that nearly all surviving and maturing common loons demonstrate). Only one common loon chick, banded in Washington at Masonry Pool near Chester Morse Lake (Documents 2.1, 3.0, 3.1, 3.4 and 7.0), has survived and established a breeding territory (at Calligan Lake, 2007; Document 3.0). These factors indicate that an unknown but high proportion of common loon mortality occurs in winter/juvenile-maturation range (Map 5). It is apparent that loons and other waterbirds in these areas need protection from lead fishing tackle.

C. Common loons migrate throughout Washington State (Map 3). The use of specific migration-staging waterbodies (Map 4; Document 7.0) varies from year to year. Chart 4 shows the percentage of recovered common loon mortalities that have occurred on migration. This is an additional reason to provide protection to common loons with a ban on the use of lead fishing tackle on all waterbodies throughout Washington.

If a ban on the use of lead fishing tackle is placed only on common loon breeding lakes, of which there were 13 in 2008, 33 during 1979-2008, and 41 during 1881-2008 (Document 3.4), lead exposure will not be reduced in other ranges shown on Map 3, Map 4, Map 5 and Map 6.

IV. Justification of Recommendation based on population decline of the common loon in Washington and western North America

There is a demonstrable long-term (post-1850) population decline of breeding common loons in Washington and throughout western North America (Map 6). Document 9.0 (Poleschook and Gumm 2008) shows how this population decline has caused the inexorable northward contraction of the southern limit of the breeding range of the common loon from northern California in the 1970's to northern Washington presently. This distance of 450 miles in 30 years represents an average contraction rate of 15 miles northward each year. Loss of habitat and higher-than-natural mortality rates, the largest single cause of which is lead toxicosis from lead fishing tackle, and other stressors are responsible for this northward contraction of the breeding range of the common loon.

There is also alarming population decline of the common loon in the heart of its winter range in northwestern Washington (Map 5). The most highly regarded, accurate and long-term winter population surveys of all bird species in North America comes from annual Audubon Christmas Bird Counts conducted by thousands of advanced birders. Data acquired during 1985-2008 by the members of the Olympic Peninsula Audubon Society, provided by Bob Boekelheide (2009), Director of the Dungeness River Audubon Center, indicates a 94% reduction in winter common loon observations during that period at the Sequim-Dungeness, Washington area along the eastern end of the Strait of Juan de Fuca (Map 5). These data were standardized to counts per observer hour on repeated boat transects. The chart below shows the dramatic decline, which has the linear mathematical expression of $y = -0.0603x + 1.4673$, and a high correlation factor of $R^2 = 0.8122$.

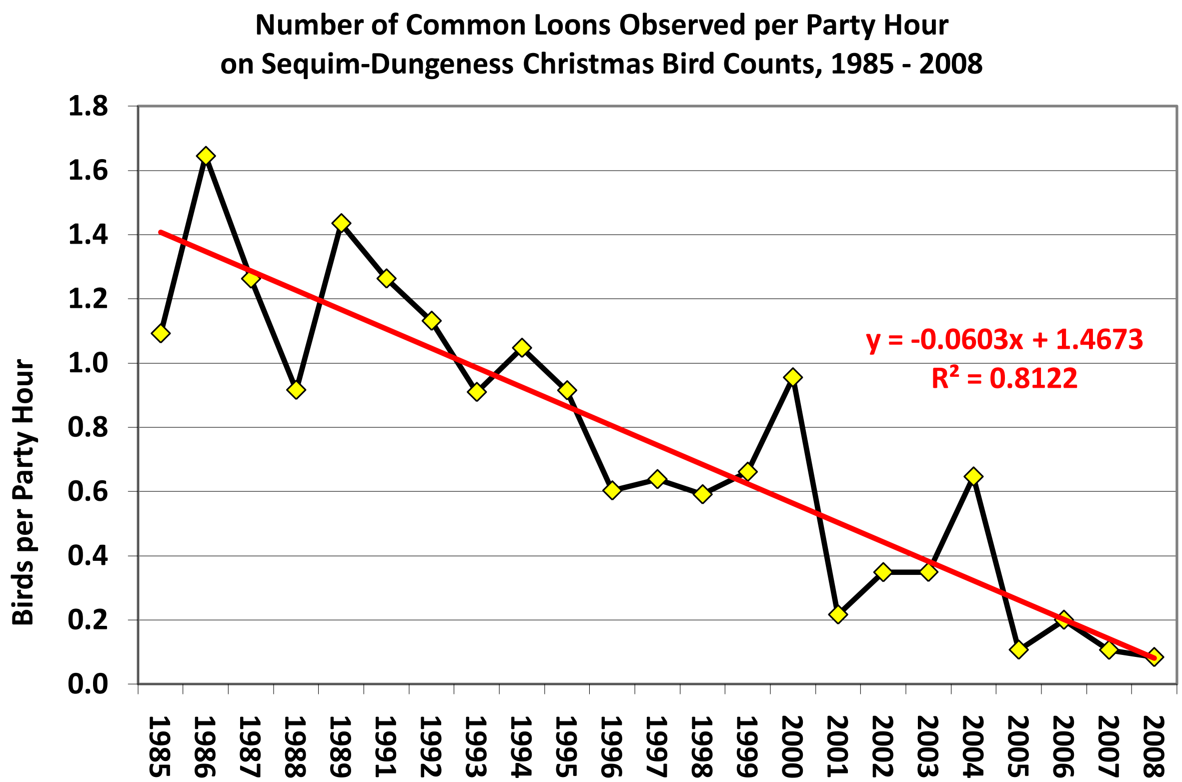
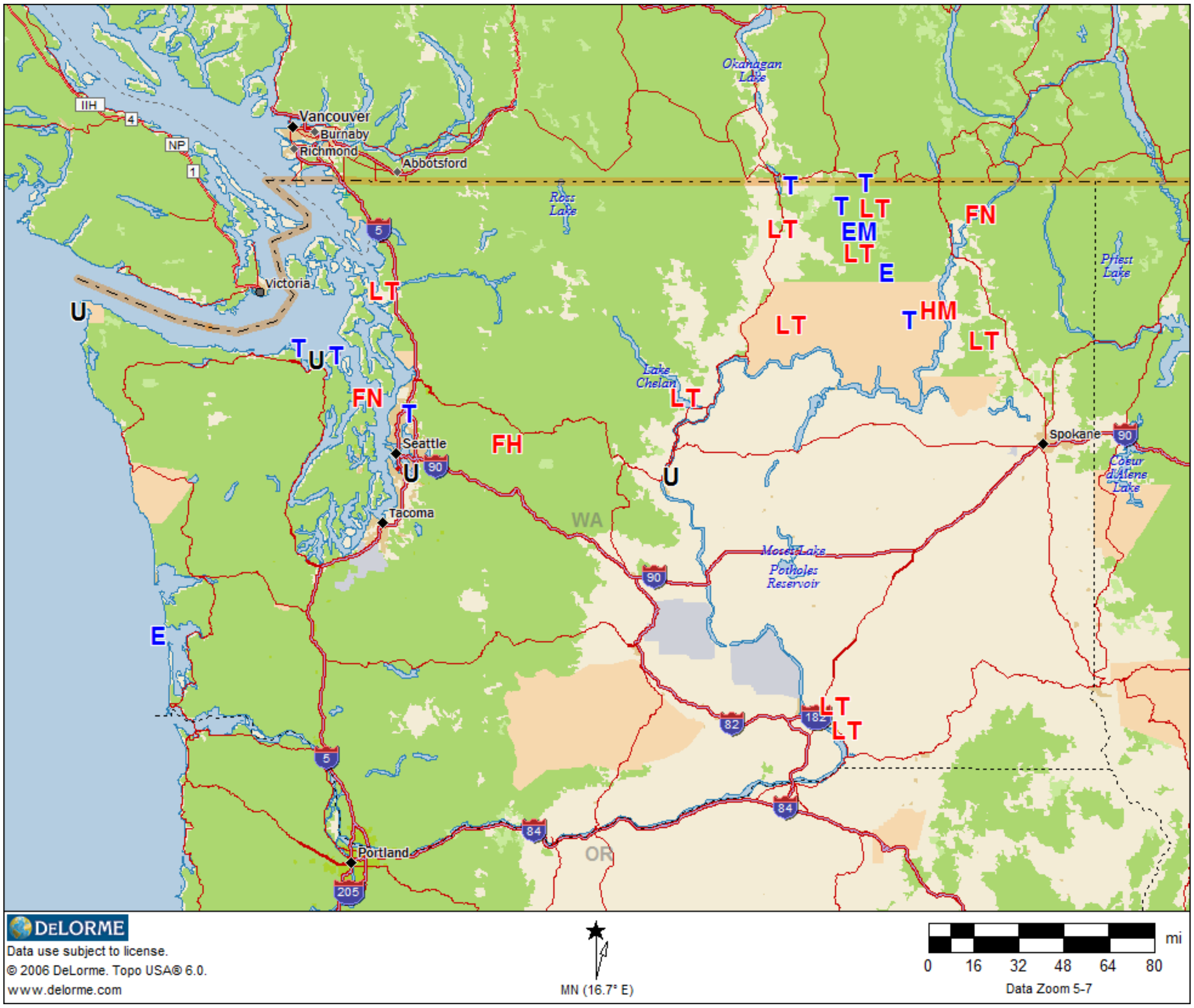


Chart 5. Number of common loons observed per party hour on repeated boat transects of the Sequim-Dungeness (Washington) Christmas Bird Count, 1985-2008 (Boekelheide 2009).

Corroborative data from the same source (Boekelheide 2009) and during the same period also shows red-throated loons, horned grebes, red-necked grebes and western grebes to have very similar winter survey declines. Highly disturbing is the indication that the trend of these declines appears to be linear regression rather than logarithmic, indicating potential extirpation.

The leading reasons for this dramatic decline in population density of common loons and other waterbird species are presently not well understood. However, data justifying this Recommendation show the leading cause of death is known for common loons throughout Washington: lead toxicosis.



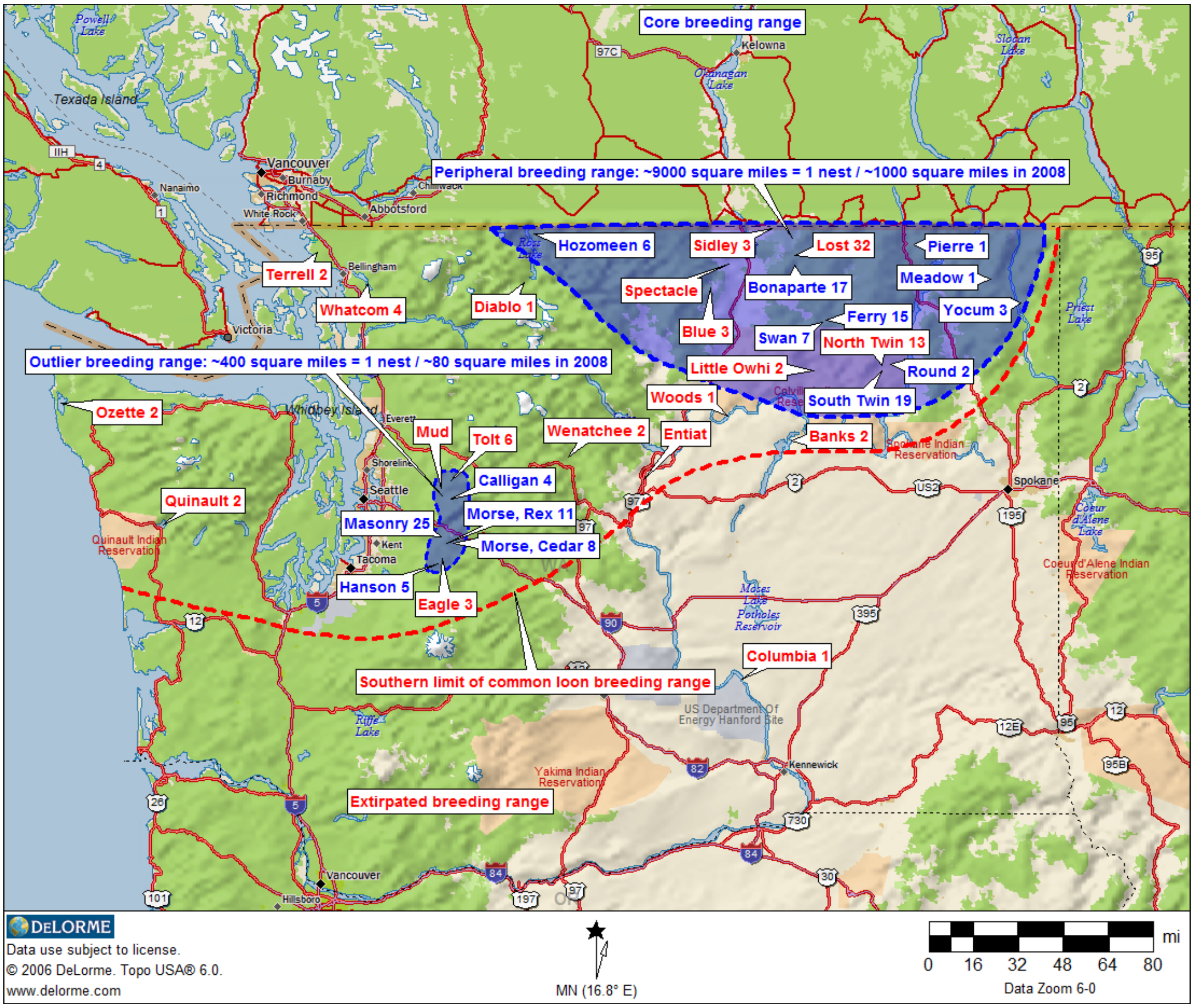
Map 1. Location of 23 known and 4 unknown (causes of death) common loon mortalities in Washington 1996-2008.

<u>Known causes of death (see Documents 5.0 and 5.1 for additional information)</u>

<u>Fishing-related = 13/23 known = 57%</u>
LT = Lead Toxicosis = 9/23 known = 39%
FN = Fishing Net entrapment = 2/23 known = 9%
FH = Fishing Hook puncture = 1/23 known = 4%
HM = Heavy Metal levels (excluding lead) = 1/23 known = 4%

<u>Non-fishing-related= 10/23 known = 43%</u>
T = Trauma = 7/23 known = 30%
E =Emaciation/parasites = 2/23 known = 9%
EM = Elevated Mercury = 1/23 known = 4%

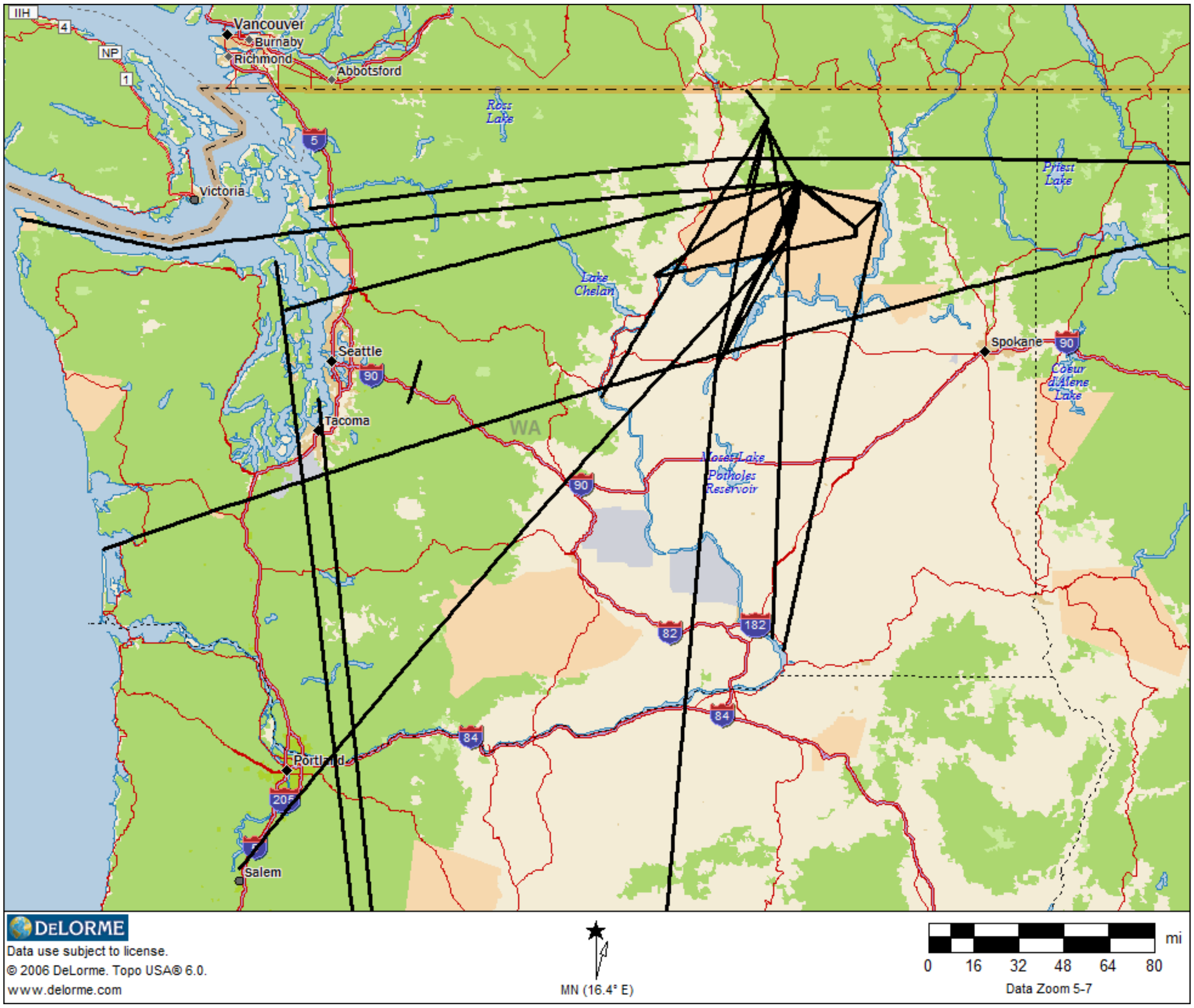
<u>U = Unknown = 4/27 total = 15%</u>



Map 2. Breeding/summer range of the common loon in Washington 1979-2008.
Thirty-three common loon breeding territories with numbers of young are known and mapped for Washington 1979-2008 (Documents 3.0, 3.1 and 9.0). A total of 207 young were produced in 30 years in these territories, averaging 6.9 young/year. Blue waterbody names with numbers of young 1979-2008 are territories that were active in 2008. Red waterbody names with numbers of young 1979-2008 are territories where at least one nest was located in the period, but inactive in 2008. Actual breeding locations vary in successive years. The red-dashed line indicates the generalized statewide southern limit of the common loon breeding range from records of nesting territories during 1979-2008 (Documents 3.0. and 3.1.).

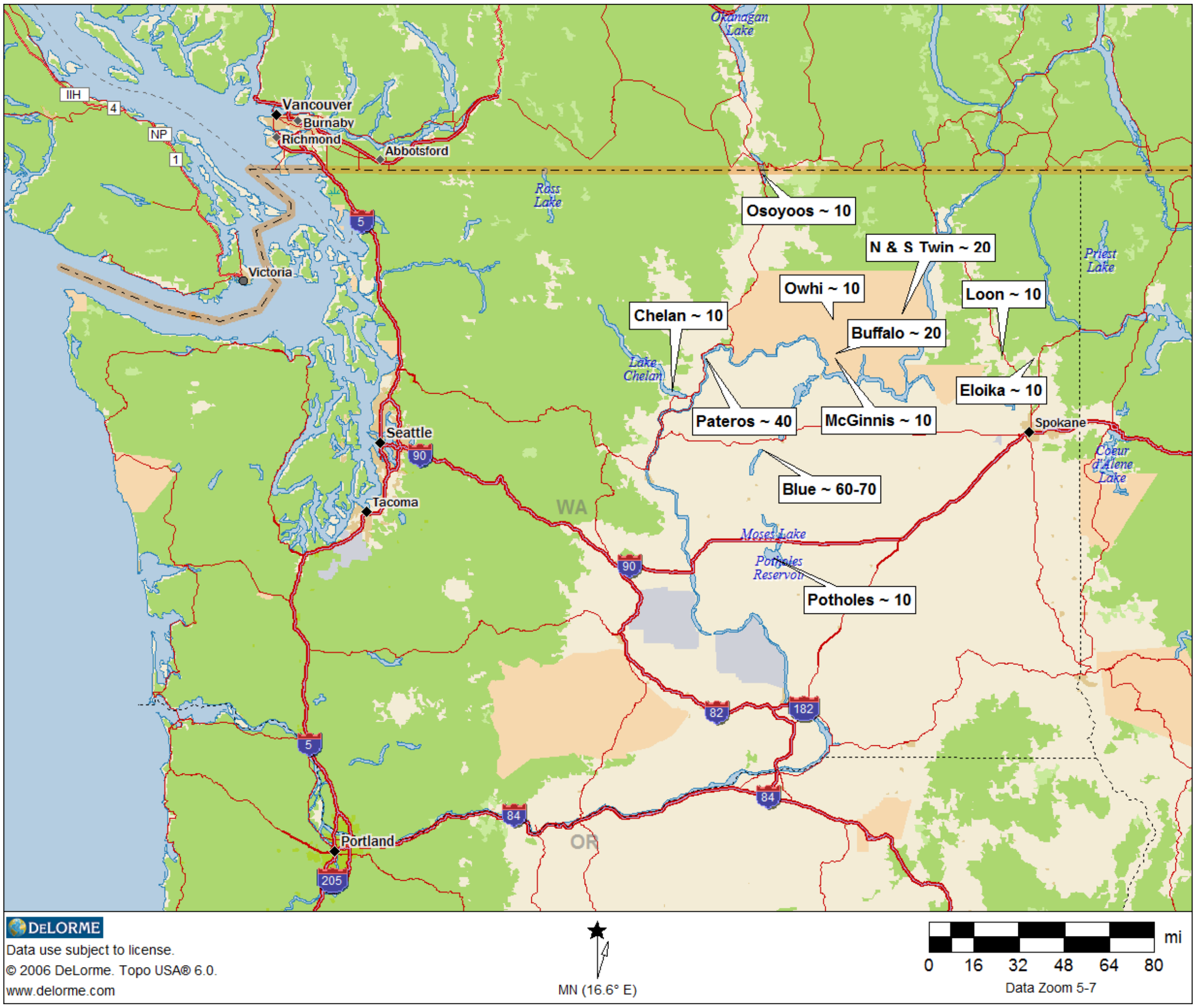
If a ban on lead fishing tackle is placed only on common loon breeding lakes, of which there were 13 in 2008, 33 known during 1979-2008, and 41 known during 1881-2008 (Document 3.4), lead exposure to common loons and other waterbirds will not be reduced in other ranges shown on Map 3, Map 4, Map 5 and Map 6.

Adapted from Figure 2 in Document 9.0. *Northward Contraction of the Breeding Range of the Common Loon in Western North America* (Poleschook and Gumm 2008).



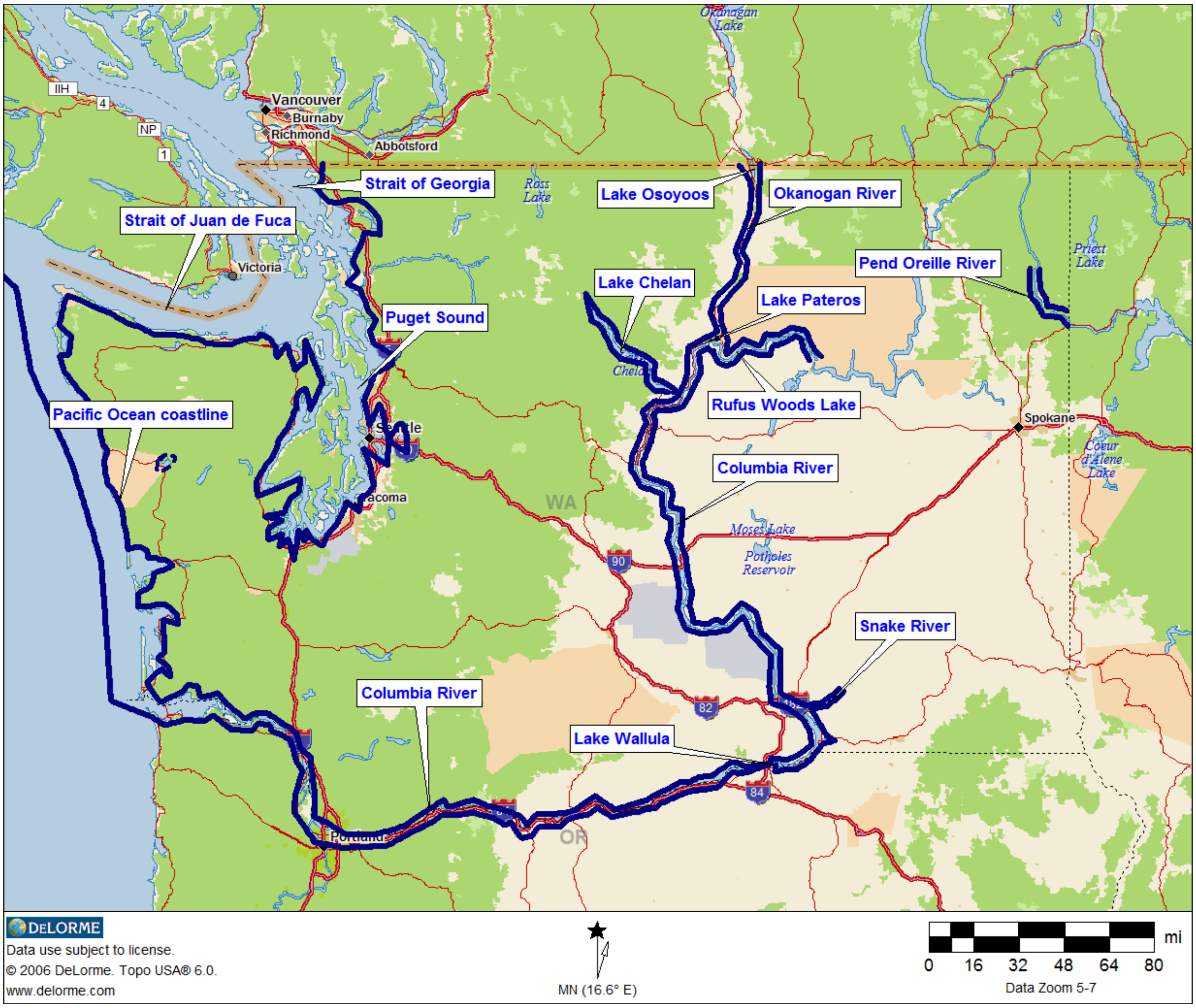
Map 3. Washington banded common loon migration and movements 1996-2008.

These lines show individual Washington banded common loon migrations and movements. They mainly indicate fall migration of territorial adults and fledglings from northeast Washington toward migration-staging waterbodies (Map 4), and toward winter/juvenile-maturation range (Map 5) on the west, southwest and south that remains ice-free. See Documents 6.0 and 6.1 for detailed information and a spreadsheet list of the migration and movements shown, GPS location coordinates and the direction of travel. These migrations and movements represent net travel, in some cases over substantial time, and may or may not indicate the actual flight paths. Not all movements are visible at this scale where there are multiple lines between points. The lines shown represent a total of 22 individual banded common loons on 41 known migrations and movements from re-observations and photography by the authors 1996-2008. The lines that depart to and arrive from the south off the map connect with Morro Bay, California (see map Document 6.3) where winter common loon banding is done by Darwin Long, IV. Two origins were in northwestern Montana (Document 5.1, mortality #'s 9 and 13). None of the above information would be known without an intensive banding program conducted yearly by biologists and field scientists of BioDiversity Research Institute. The lack of indicated movement of Washington common loons to and from British Columbia is an artifact, caused mainly by the lack of study of the common loon in British Columbia, where core wintering and breeding range exists. Adapted from Document 6.2 *Washington Common Loon Migration and Movements*.



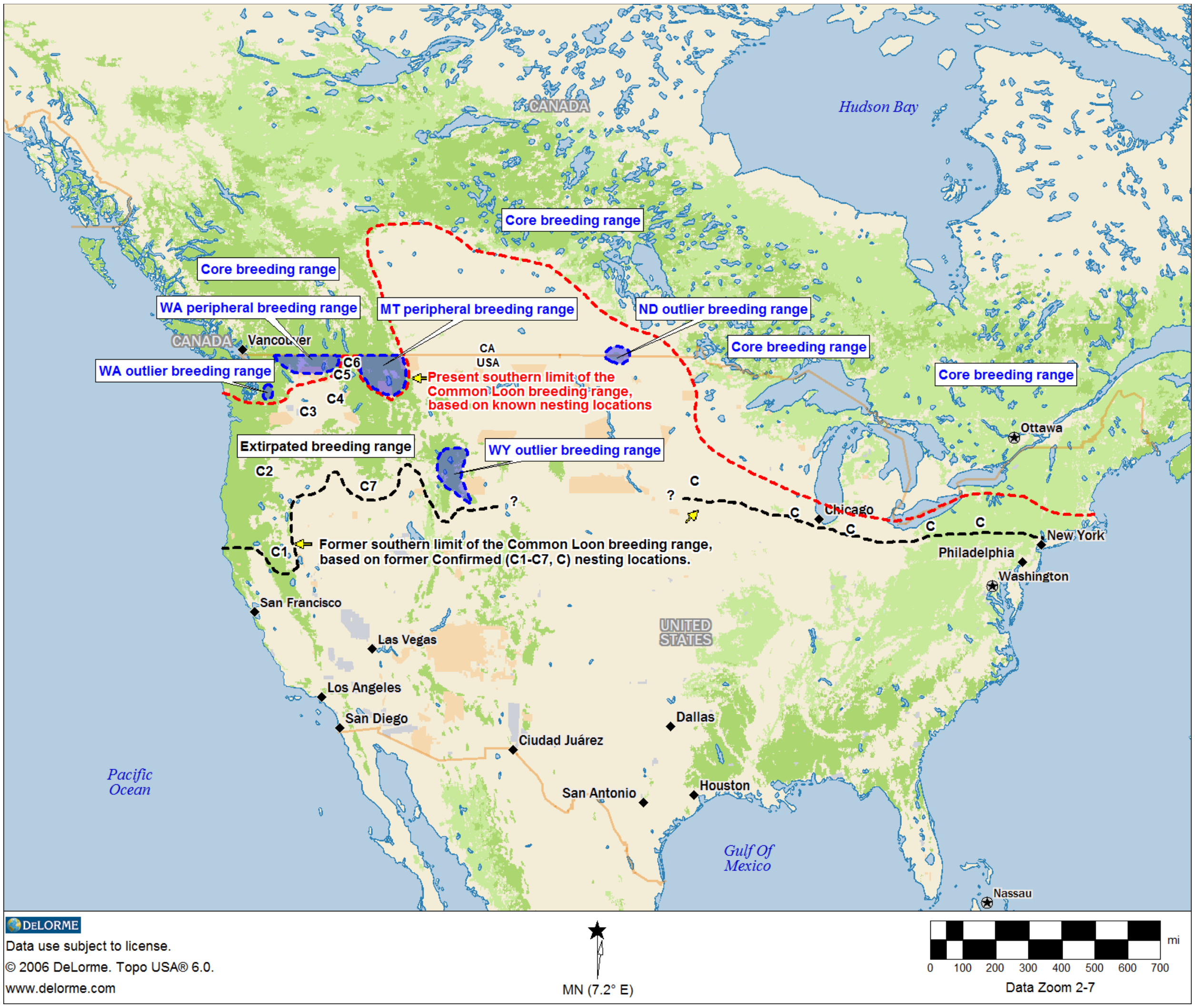
Map 4. Principal common loon migration-staging waterbodies in Washington.
Hundreds of common loons congregate in eastern Washington during migration as they use traditional migration-staging waterbodies for a few weeks, the most prominent of which are shown above, indicating typical numbers during peak migration. Many additional waterbodies (not shown) are also used by smaller numbers. Migration-staging waterbodies provide a suitable abundance of fish and crayfish for the loons as they rest and socialize in loose rafts. This is followed by later migration in the fall toward winter/juvenile-maturation range (Map 5), or in the spring toward breeding territories and summer range in northeast Washington (Map 2), in northwest Montana, likely in British Columbia and Alberta, and possibly in Wyoming, Saskatchewan and Manitoba (Map 6; Figure 1 of Document 9.0). See Document 7.0 for a complete list and notes of known common loon migration and migration-staging waterbodies (n = 52) in Washington.

Because common loons use many waterbodies for migration and migration-staging each year, there is a strong argument for a recommended ban on the use of lead fishing tackle to be statewide.



Map 5. Common loon adult winter and juvenile-maturation range in Washington. The largest population of common loons in Washington is during the winter. Common loon population densities increase in the winter in the waterbodies contained and highlighted in blue. Nearly all fresh-water breeding territory waterbodies (Map 2) are ice-covered in the winter, precluding loon occupancy. However, the use of the inland parts of the Columbia River for common loon winter and juvenile-maturation range from Lake Wallula to Rufus Woods Lake is increasing. The use of the indicated fresh waterbodies in north-central and northeast Washington in winter is variable, dependent on weather severity. This map represents typical winter/juvenile-maturation range distribution in an average year. See Document 7.0 for a complete list and notes of common loon winter/juvenile-maturation waterbodies in Washington (n = 52).

Common loons need protection from lead fishing tackle in all winter and juvenile-maturation range throughout Washington.



Map 6. Northward contraction of the breeding range of the common loon in North America. The approximate historical (circa 1850) former southern limit of the common loon breeding range (generalized black dashed line) in North America is shown based on former confirmed nesting locations (C1-C7 on the west, and five black letter C's on the east). The present generalized southern limit of the common loon breeding range (red dashed line) is defined by nesting surveys and records in various states and provinces north of the line; see Documents 3.0 and 3.1 for the Washington portion. Common loon breeding has been extirpated in approximately 300,000 square miles in the west, and 150,000 square miles in the east, in regions between the two lines, including large regions of formerly suitable nesting habitat (clear, fresh-water forested and prairie areas) in California, Oregon, Washington, Idaho, Montana, Iowa, Illinois, Indiana, Ohio, Pennsylvania, New York and Massachusetts. The distance between former common loon breeding locations in California in the late 1970's (C1) to the current southern limit of common loon breeding in Washington is 450 miles (all across formerly suitable nesting habitat). That amount of northward contraction of the common loon breeding range in 30 years represents a rate of 15 miles/year. The former southern breeding range limit between southern Wyoming and southern Iowa is unknown (queried medial ends of the black dashed line), but was connected in some way before settlement. The small detached common loon breeding populations shown in western Washington (WA), northwestern Wyoming (WY), and northern North Dakota (ND) are

outlier breeding ranges, disconnected from core breeding areas. Other outlier common loon breeding ranges likely exist in north-central and eastern states. Slightly larger common loon breeding populations of north-central to northeastern Washington (WA) and northwestern Montana (MT) are peripheral breeding ranges, connected to, but on the edge of the core breeding range. Core common loon breeding range is indicated in Canadian provinces and north-central and northeastern states. Dark green and light green shading indicated on the map represents coniferous and hardwood forest distribution, respectively. All common loon nesting was south of the present southern limit (red dashed line) of the common loon breeding range during the glacial maxima 15,000 to 12,000 ya. This map is adapted from Figure 1 of Document 9.0 *Northward Contraction of the Common Loon Breeding Range in Western North America* (Poleschook and Gumm 2008). The common loon breeding range limits and confirming nesting locations in central and eastern states (C's) and provinces are from McIntyre (1988).

Map 6 demonstrates long-term population decline and extirpation of breeding common loons in vast areas of North America including Washington. Lead toxicosis from the use of lead fishing tackle has been shown to be the largest cause of death of common loons in Washington and elsewhere. Therefore, if lead toxicosis mortalities are reduced by a ban on the use of lead fishing tackle, the northward contraction of the common loon breeding range in Washington would be slowed, halted or reversed.

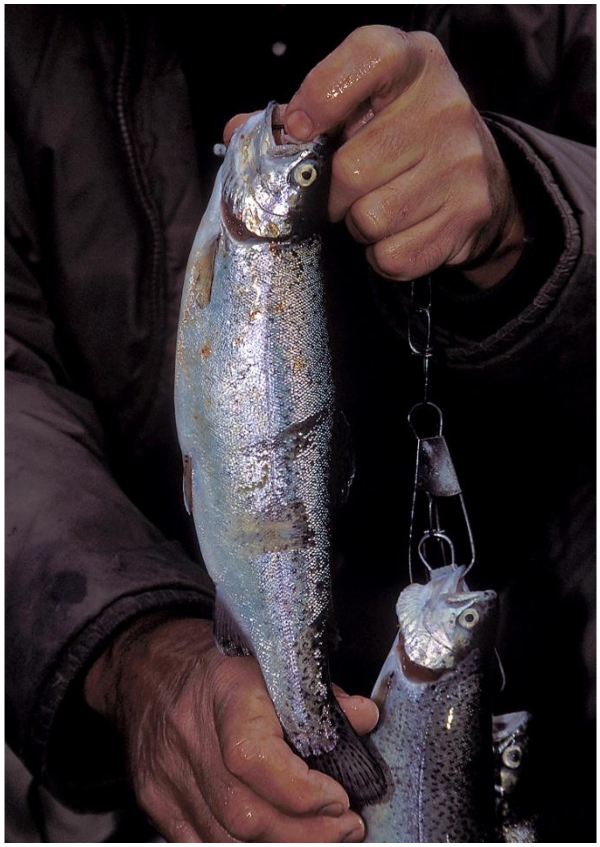


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Image 1. The grab marks on the sides of this trout indicate where the territorial male common loon at Ferry Lake, Washington attempted to take the fish as it was being reeled-in. The man fishing stated: "That loon hit it real hard." Fish with attached line are easier for loons to capture. There is high likelihood when loons ingest fish with attached line of also swallowing lead fishing tackle.

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Image 2. Another example is shown of grab marks, made on this fish by the edges of the bill of the common loon that attempted to take it while it was being reeled-in. The fisher indicated there was a sudden hard pull on the line while he was bringing-in the fish.

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Image 3. Common loons acquire lead mainly by ingesting fish on a line in use or a broken line (above) with lead tackle, and to a lesser amount by mistakenly selecting lead sinkers, shot and bullets for grit. As little as one ingested lead object will kill a waterbird from lead toxicosis.

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Image 4. This adult common loon has swallowed a fish with broken line and tackle. It is impossible from this image and the field observation that was made to ascertain if the bird ingested lead. Loons that do ingest lead die within a week to 10 days.

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Image 5. This juvenile yellow-billed loon was observed and photographed March 9, 2009 at Rufus Woods Lake on the Columbia River. The rare bird ingested a fish with broken line which is visible on the left of the lower part of the neck and trailing over the back. Note the close-up below for an enhanced view of the line.

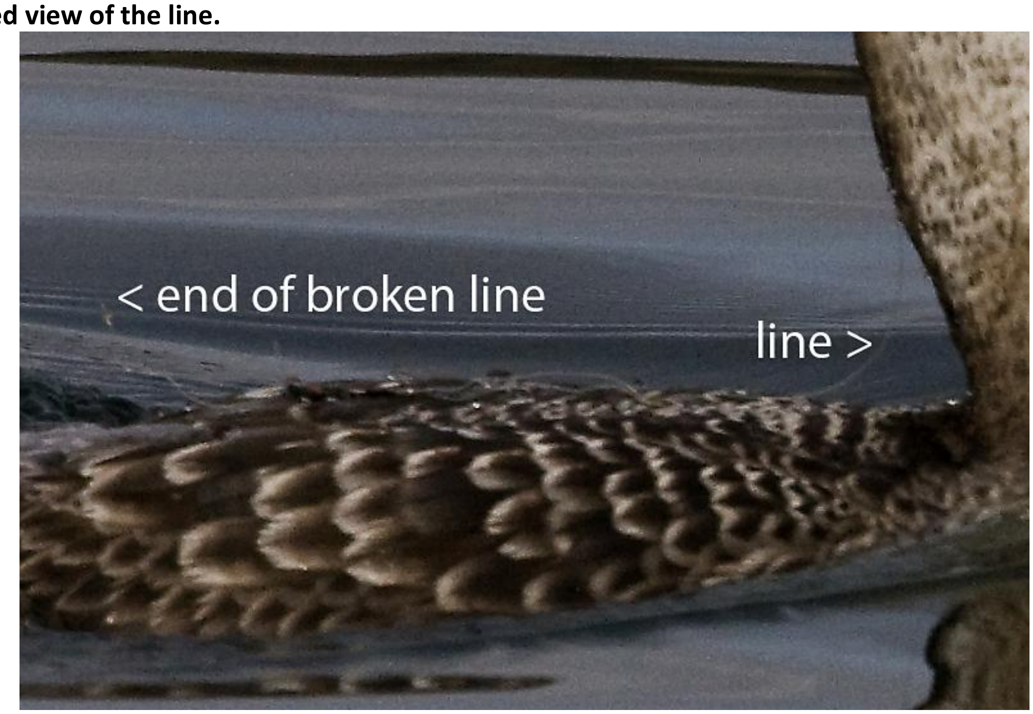

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Image 6. A close-up of the above image shows the trailing fishing line as indicated by the arrows. The line passes behind the neck as it continues upward to the gape of the bill (not visible in this image, but observed and photographed on other images).

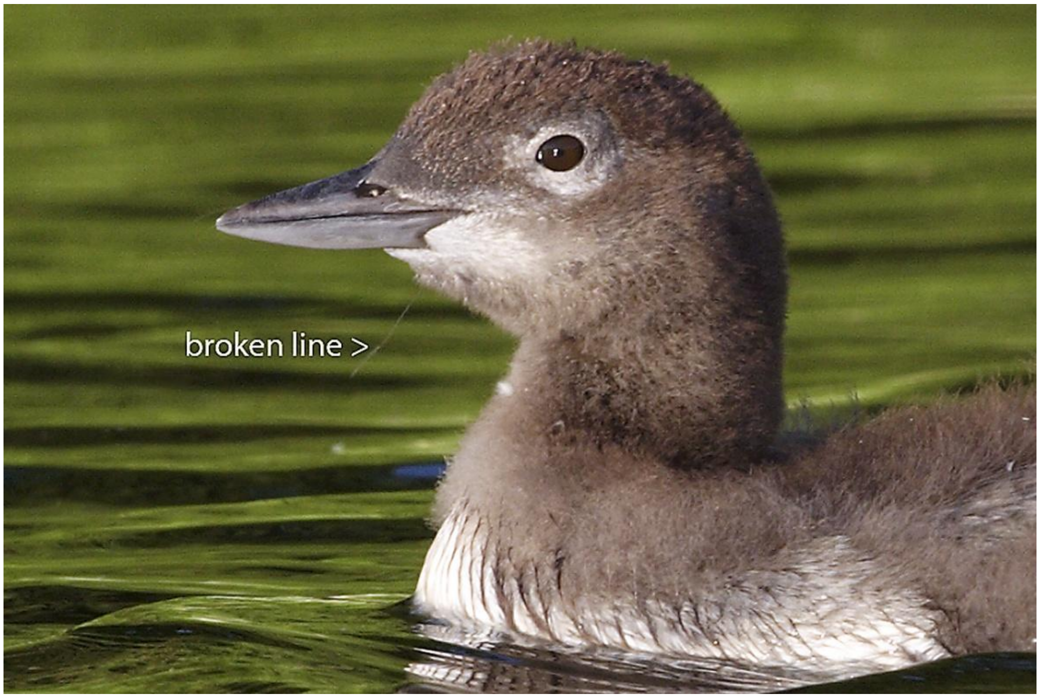

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Image 7. This six-week-old common loon chick has been fed a fish with a broken fishing line as indicated by the arrow. Adult common loons are unaware of the hazard when they provide fish with hooks, other tackle and line to their young.

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Image 8. This 11-week-old common loon chick has ingested a fish with a broken fishing line. It is shown struggling to rid itself of the complication. Its sibling observes from behind.

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Image 9. This adult common loon was recovered on the shoreline of Lake Chelan, Washington (Document 5.1, mortality #5). It was determined that the bird had died from lead toxicosis after four lead sinkers were found in its gizzard (Images 10 and 11). More common loons die in Washington from lead toxicosis from ingesting lead fishing tackle than from any other cause. Many other waterbirds also succumb yearly to lead toxicosis.

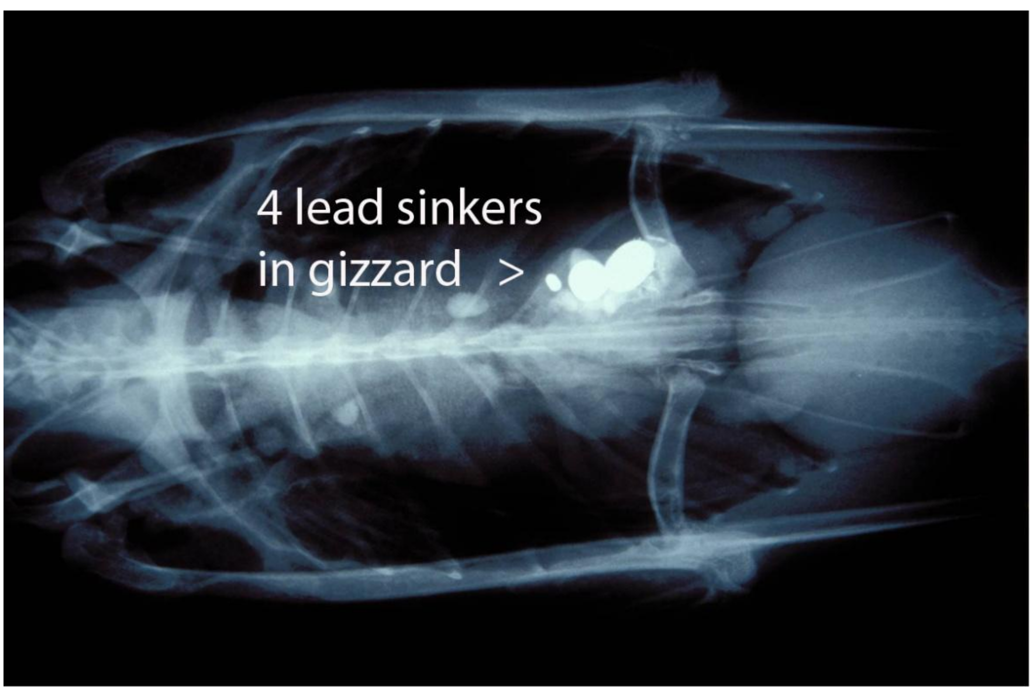

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Image 10. X-ray imagery of the above common loon that died from lead toxicosis (Image 9) reveals four lead fishing sinkers (bright spots on X-ray) in its gizzard, two of which were highly abraded (see Image 11).

Daniel Poleschook, Jr. and Virginia R. Gumm

Image 11. The gizzard contents are shown of the common loon of Images 9 and 10 that expired from ingesting a fish with line and lead sinkers attached. Note the 20 pebbles on the three upper rows (average length = 1.00 cm = 0.39 inch) that were selected as grit to aid digestion. Note on the fourth row, the four lead sinkers, one oval (length = 1.78 cm = 0.70 inch), one spherical (diameter = 0.75 cm = 0.29 inch), and two smaller ones that were heavily abraded (center). Note also the two segments of the fishing line with a portion of a knot still visible. The loon's gizzard ground the two highly abraded lead sinkers (center of fourth row) releasing lead and causing death by lead toxicosis. Scale in centimeters.

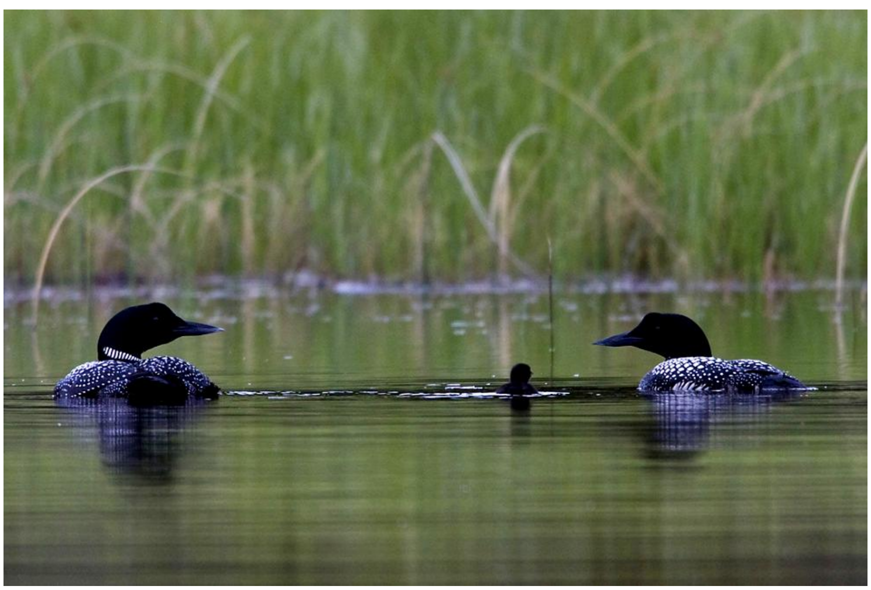

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Image 12. This common loon family had the following outcome at Lost Lake, Washington in 2003: The territorial male (left) perished from lead toxicosis (Document 5.1, mortality #7), and the less protected chick was predated by a bald eagle a few days later.

Summary

Independent and corroborative sources of data indicate that the breeding range of common loons in Washington is in northward contraction and winter populations of this valuable aquatic indicator species are in rapid decline. Both indicate a higher-than-natural rate of mortality. Necropsies performed on common loon mortalities in Washington 1996-2008 provide data to indicate lead toxicosis from lead fishing tackle is the largest single category of common loon mortality. Breeding/summer, migration/migration-staging, winter/juvenile-maturation range maps, documentation of the contraction of the breeding range of the common loon in Washington and standardized surveys showing steep population decline on winter/juvenile-maturation range indicate the need for a ban on the use of lead fishing tackle to be statewide. The scientific data used in this recommendation have been gathered over a long time period, they were acquired throughout Washington and they agree closely with other larger volumes of similar research done in other states. No other collection of scientific data, to our knowledge, is as relevant to address the problems associated with the anthropogenic distribution of lead into the Washington aquatic environment from using lead fishing tackle. From these indications and determinations we draw one conclusion: A ban on the use of lead fishing tackle in Washington needs to be made quickly, and it needs to be made statewide.

Importance of this Recommendation

Banning the use of lead fishing tackle will be controversial, but, at the same time, highly beneficial to many waterbirds (many of which are in steep population decline), the environment in general, and to the health of the general public. Stressors on wildlife, mainly from anthropogenic activities, such as loss of habitat, environmental contamination (including lead), aquatic recreation and global warming are increasing. No other Washington legislation has the potential for providing as much help to waterbirds. Bans on the use of lead fishing tackle in other states have been successful (Vogel 2005). Banning the use of lead fishing tackle will likely be the single most beneficial piece of legislation enacted by the present members of the Washington Fish and Wildlife Commission. We challenge the Commissioners to provide a legacy for the future. Many citizens of Washington will be appreciative of the passage of this recommendation.

Education and Press Releases

The authors have been presenting education programs on the behavior, status and conservation, and ecology of the common loon since 1996 to various groups including: North American Loon Fund, elementary schools, over 25 Audubon Society groups, the Natural History Council of the Confederated Tribes of the Colville Reservation (11/3/2009), and to wildlife managers of the United States Forest Service and the Washington Department of Fish and Wildlife. Several scientific articles in magazines and journals have featured our common loon images, including *BioScience*, *Journal* of Wildlife *Management* and *National Geographic Magazine*, and the book *The Call of the Loon* (Evers and Taylor 2006) featured our images exclusively. The article Document 21.0 *Summary of Status and Conservation of the Common Loon in Washington* was published by Wetland Ventures 8(3) May 2006. Several newspaper articles and television interviews have carried our common loon conservation message and used our data and images.

Cooperative Agencies

Audubon Washington and various local Chapters
BioDiversity Research Institute and International Center for Loon Conservation, David C. Evers, Executive Director
Confederated Tribes of the Colville Reservation, Virgil Seymour, Director of Natural Resources, and Joe Peone, Director of Fish and Wildlife
Loon Lake Loon Association, Joan Easley, President
Northeast Loon Study Working Group, David C. Evers, Working Group Chair
United States Forest Service, Colville National Forest, Washington, James E. McGowan, Forest Wildlife Biologist
Washington Trumpeter Swan Working Group, Martha Jordan, Chair

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